INSTALLATION, OPERATION AND MAINTENANCE MANUAL

WALL SPLIT DUCTLESS
COOLING ONLY AND HEAT PUMP SYSTEMS

Cooling Only Models	*Heat Pump Models:*
HF-25GW/GX1B	HFR-25GW/GX1B
HF-35GW/GX1B	HFR-35GW/GX1B
HF-51GW/GX1A	HFR-51GW/GX1A
HF-70GW/GX1A	HFR-70GW/GX1A

9,000 Btu / 12,000 Btu

18,000 Btu

24,000 Btu

Harbor Point Air Conditioners

www.harborpointac.com

HARBOR POINT WALL SPLIT DUCTLESS SYSTEMS

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

This manual is intended as an aid to a qualified service personnel for proper installation, operation, and maintenance of Harbor Point Air high efficiency R-410A Wall Split Ductless Systems. Carefully read these instructions before attempting installation or operation. Failure to follow these instructions may result in improper installation, operation, or maintenance, possibly resulting in fire, electrical shock, property damage, personal injury, or death.

Shipping Damage <u>MUST</u> be Reported to the Carrier <u>IMMEDIATELY!!!</u>
Examine the carton for signs of damage if any is evident open packaging and check the unit for shipping damage.

TO THE INSTALLER

(1) Retain this manual for future reference.

(2) Before leaving the premises, review this manual to be sure the unit has been installed correctly and run the unit for one complete cycle to make sure it functions properly.

To obtain technical service or warranty assistance during or after the installation of this unit, check our website at www.harborpointac.com or call your installing contractor or distributor. Our technical service department may be contacted at 1-888-908-9888.

When calling for assistance, please have the following information ready:

- Indoor Unit Model Number_____
- Indoor Unit Serial Number_____
- Outdoor Unit Model Number_____
- Outdoor Unit Serial Number_____
- Date of installation_____

SAFETY INSTRUCTIONS

- Read all instructions before using the Harbor Point high efficiency system. Install or locate this system only in accordance with these instructions. Use this system only for its intended use as described in this manual.
- Check rating plate for correct system voltage before installing. Installation and operation of a system with the incorrect voltage may result in malfunction or other issues and ***will void the warranty***.
- The Harbor Point system must be connected only to a properly grounded electrical supply. Do not fail to properly ground this unit.
- Turn off the electrical supply before servicing the Harbor Point system.
- Do not use the Harbor Point system if it has damaged wiring, is not working properly, or has been damaged or dropped.

[Save These Instructions]

This symbol is an indication of Important Safety Information.

⚠ DANGER ⚠

Tampering with the Harbor Point system is dangerous and may result in serious injury or death. Tampering voids all warranties. Do not attempt to modify or change these units in any way.

PRODUCT DESCRIPTION

The Harbor Point system is an efficient wall split ductless conditioning system with cooling capacities from 9,000-24,000 Btu and heat pump capacity of 9,000-24,000 Btu. Designed for quiet operation and boasting compact dimensions, the Harbor Point system includes advanced features like auto-restart, full feature remote control.

Comprised of three standard components the indoor evaporator, the outdoor condensing unit, and an infrared handheld remote control are engineered to the highest performance and reliability. The evaporator is equipped with permanent washable air filters as well as motorized air sweep for enhanced air circulation, and the condensing unit is equipped as standard with a high efficiency rotary compressor.

Harbor point recommends the system for residential and light commercial cooling and heating applications and will operate in standard cooling mode down to 60°F outdoor temperature.

INSTALLER SUPPLIED ITEMS

- ***Main System Breaker:*** Sized per unit requirements, to be mounted adjacent to outdoor unit.
- ***Mounting Hardware:*** Wall anchors, condenser pad.
- ***Vacuum Pump***
- ***Gauge Set :*** R-410 specific.
- ***High Voltage Interconnect Wiring:*** 14 AWG wiring from outdoor unit to indoor unit for power and control. ******
- ***Refrigerant :*** R-410A required for additional line sets beyond 16 ft.

****** *Can be purchased through the factory as an accessory, (part of the **Tube Set Kit** below)*

ACCESSORY

Tube-Set Kit consisting of:

- ***Refrigerant Line Set -*** 16.4 feet of suction and liquid line, both fully insulated, and flare fittings supplied on both ends.
- ***Interconnecting High Voltage Wiring -***16.4 feet supplied.
- ***Additional Condensate Tubing -*** 6 feet extra supplied.

FACTORY SUPPLIED ITEM

- ***Matched System Consisting Of:*** Evaporator section and condenser section with remote control.

ITEMS FOR CONSIDERATION

Application:

Check the application of the unit prior to installation, certain applications require additional components or installation parameters, such as the need for external condensate pump or if the system will need to perform low ambient cooling at outdoor temperatures below 60°F.

CHOOSING UNIT MODEL

MODELS OFFERED				
Indoor Model #	**Outdoor Model #**	**Duty**	**Capacity Btuh**	**Voltage**
HF-25G/GX1b	HF-25G/GX1b	Cooling Only	9,000	115-1-60
HF-35G/GX1b	HF-35G/GX1b	Cooling Only	12,000	115-1-60
HF-51G/GX1a	HF-51G/GX1a	Cooling Only	18,000	208/230-1-60
HF-70G/GX1a	HF-70G/GX1a	Cooling Only	24,000	208/230-1-60
HFR-25G/GX1b	HFR-25G/GX1b	Heat Pump	9,000	115-1-60
HFR-35G/GX1b	HFR-35G/GX1b	Heat Pump	12,000	115-1-60
HFR-51G/GX1a	HFR-51G/GX1a	Heat Pump	18,000	208/230-1-60
HFR-70G/GX1a	HFR-70G/GX1a	Heat Pump	24,000	208/230-1-60

PRE INSTALLATION

Determine the best location for mounting the indoor unit, it must be located a minimum of 4 ft (6 ft or more recomended) from the floor and no less than 6" from ceiling.

Pay attention to the air circulation in the room, 9,000 & 12,000 Btuh units throw air 15ft, 18,000 & 24,000 Btuh units throw air 25ft, ensure no obstacles to airflow exist.

Locate the indoor and outdoor units as close together as possible, maximum line set run and lift ***MUST NOT BE EXCEEDED***. Determine how the interconnect piping, wiring and condensate hose are to be run.

Unit	Max Line Set Run	Max Vertical Lift
HF-25/HF-35	50 Feet	17 Feet
HF-51/HF-70	50 Feet	17 Feet
HFR-25/HFR-35	50 Feet	17 Feet
HFR-51/HFR-70	50 Feet	17 Feet

Ensure that all panels can be removed for service as required.

Certification:
All Harbor Point Systems are certified by UL under UL Standard 1995. Performance is varified by CSA under ARI 210/240 test standard.

CONTROLS AND COMPONENTS

Units are supplied with a wireless remote control, which communicates with the unit microprocessor control. The return air temperature sensor mounted in the indoor unit provides input to the control for system operation.

Several modes of operation are available to the end user depending on the type of comfort required. All unit operating functions are controlled via the remote control. Refer to *"System Operation"* section of this manual.

OPTIONAL CONTROLS AND COMPONENTS

Low Ambient Control:
Please consult the factory for availability of approved method of low ambient cooling operation.

Condensate Pump:
It is recommended to use the supplied condensate drain hose in a gravity fed method whenever possible. If this can not be done then a field installed pump that is external to the evaporator would be required.

INDOOR UNIT INSTALLATION

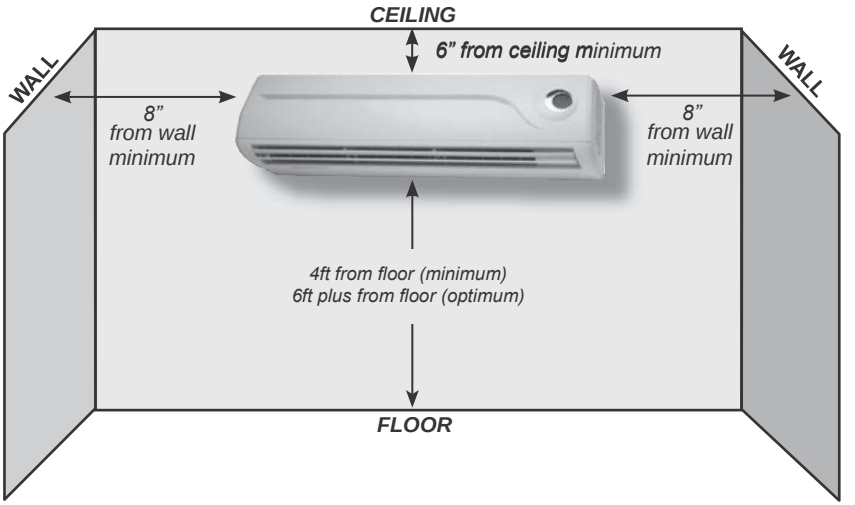
⚠ CAUTION ⚠

Follow Instructions, failure to follow instructions may cause possible malfunction and void any warranty.

Remove indoor and outdoor units from the carton/box. Indoor unit carton contains, remote control and batteries, ensure these are kept in a safe place during installation.

Locate area to install indoor unit the unit should be located a minimum of 6 ft. from the floor and 6" from the ceiling.

Choose an area where the wall is plumb and determine how to best to run the unit interconnects.



Ensure no obstacles to airflow are directly in front of the unit, for a minimum of 12 ft for 9,000/12,000 Btuh units and 16 ft for 18,000/24,000 Btuh units.

Do not install the Indoor unit units in areas exposed to high humidity *(Relative Humidity of 80% or more)*, direct sunlight and direct heat from stoves or other devices.

INDOOR UNIT INSTALLATION

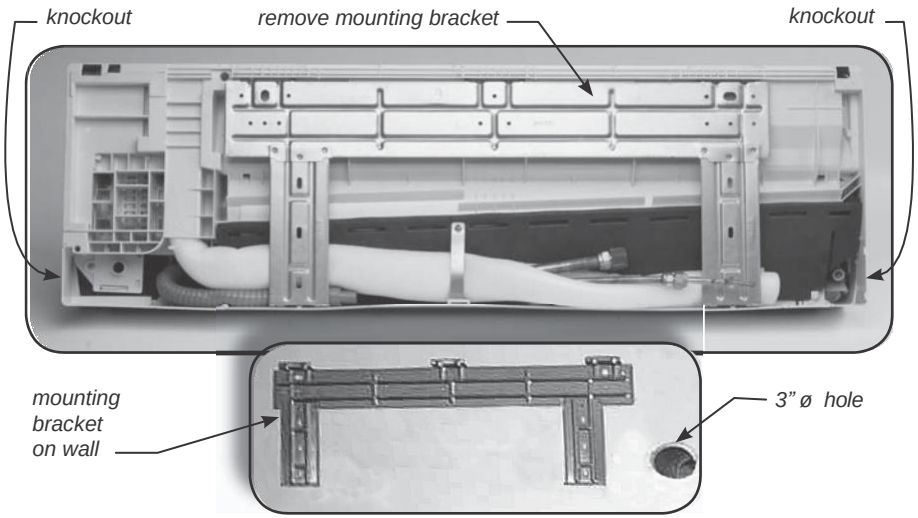
Prepare the evaporator for mounting
by removing the mounting bracket from the rear of the indoor unit. Use a Phillips head screwdriver to remove the unit pipe strap. If the unit is a heat pump the defrost sensor also must be undone from its retainer.

If mounting the unit on an outside wall measure from the edges of the unit to the center of the line set 90° bend to locate the the center of the wall penetration. Drill a 3" ø hole through the wall. Angle the wall penetration slightly down towards the outside to assist in draining the condensate away from the unit.

If mounting the unit on an inside wall, use the knockouts provided on the left and right sides of the unit to route the piping and wiring connections through.

The indoor unit weighs a maximum of 20 Lbs. Use wall anchors to secure the mounting bracket to a wall stud and ensure that the wall is capable of holding the weight of the unit.

Be sure mounting bracket is level, so that the condensate can drain properly.



Note: *Prepare all wiring and piping connections before hanging the unit on the mounting bracket.*

INDOOR UNIT INSTALLATION

Prepare unit line set connections

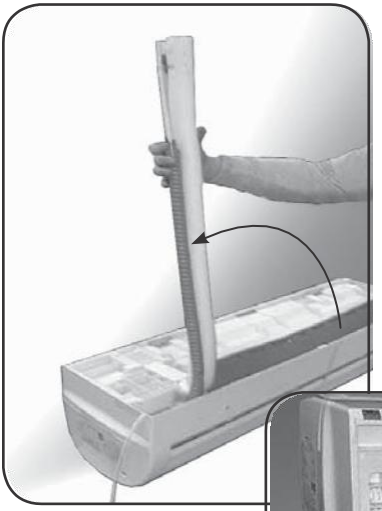
Rotate refrigerant line stubs gently to 90° *(if mounting on an outside wall)*. For other line set configurations align the stubs as required.

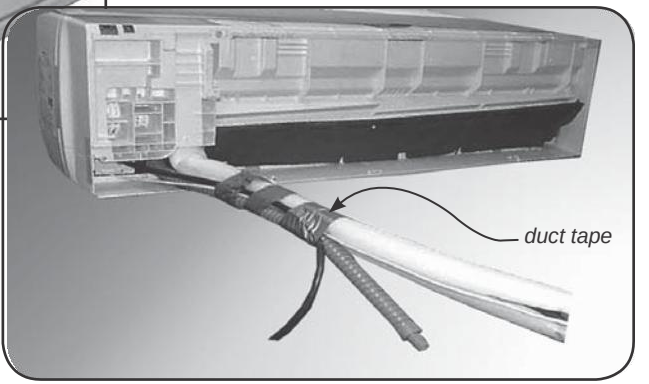
Tip: Use Duct tape to tape the Condensate hose *(make sure it is below the Line set stubs)* and the defrost sensor *(heat pump only)*. This makes it easier to guide them through the hole in the wall.

Feed the 14 AWG interconnect wiring between indoor and outdoor through the unit electrical connection *(maximum number of 6 wires is required) (if required by local codes an electrical connector can be attached to the rear of the unit)*. Tape the loose wire to the line set stubs. (See *Electrical Wiring Install section*.) These two tips save time and prevent damage to the stubs when mounting the indoor unit.

HEAT PUMP SYSTEMS

Very Important! Make sure the defrost sensor wire is run and connected between the indoor and outdoor units, or the heat pump system will not operate in heat mode. Refer to *"Heat Pump Wiring"* section of this manual.





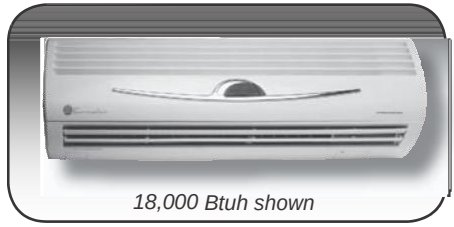
INDOOR UNIT INSTALLATION

Install unit on mounting bracket

Feed the line set stubs/condensate hose/ wiring connections through a ø 3" hole in the wall.

Position the evaporator so that the "key" slots on the back of the unit slide onto the tabs on top of the mounting bracket. Then push the lower portion of the evaporator against the bracket until it latches into the mounting bracket.

Indoor unit is now installed, it should be plumb, level and flush with the wall. Insure that the line set stubs are completely through the wall penetration, also check that the wall is plumb. The unit must be level and plumb for proper condensate removal.



18,000 Btuh shown

OUTDOOR UNIT INSTALLATION

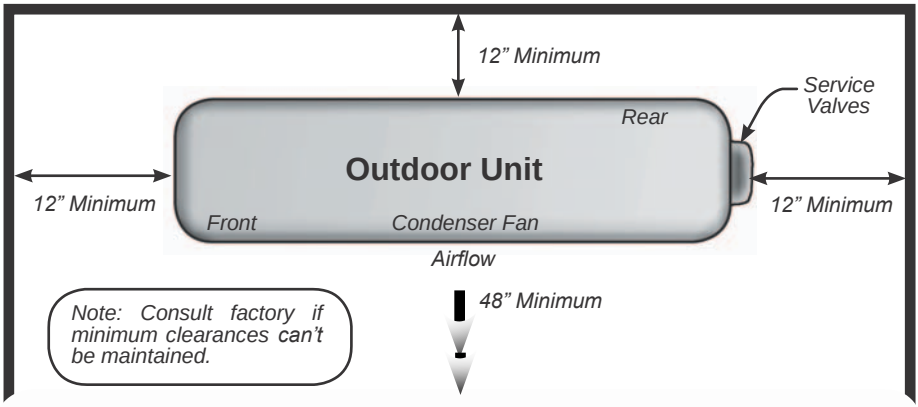
Locate Outdoor unit

Select a location with proper ventilation, minimizing recirculation possibility. Do not install the outdoor unit in a location exposed to high winds *(field fabricated and installed wind baffle may be required)*.

Ensure location does not impede access around unit and pose a disturbance to neighboring areas.

Install the outdoor unit on a condenser service pad. If unit is a heat pump extend feet to raise 6" to allow for defrost to drain away.

Clearances for the Outdoor unit:



Refrigerant Line Set Piping

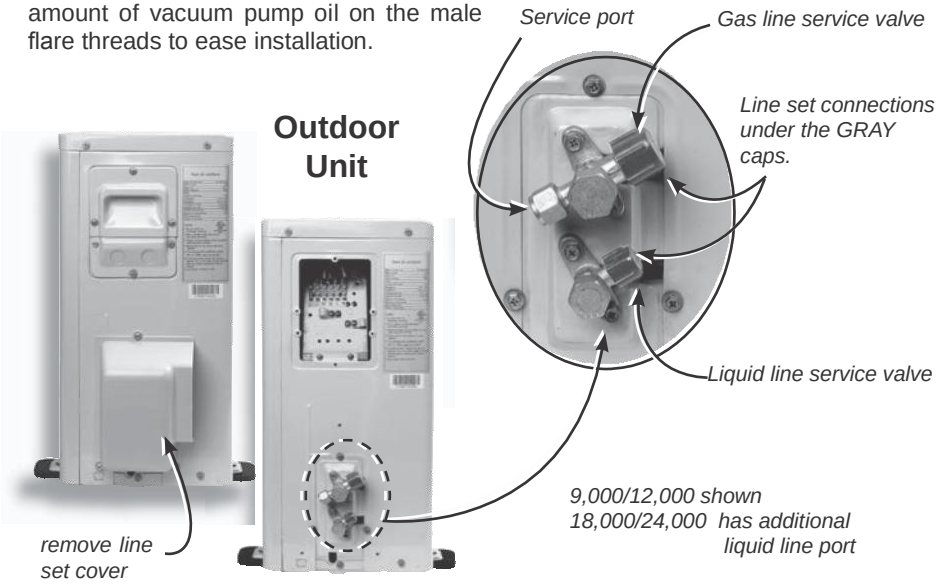
Interconnecting line set between the outdoor unit and the indoor unit, must have both refrigerant lines insulated as the expansion device is located in the outdoor unit.

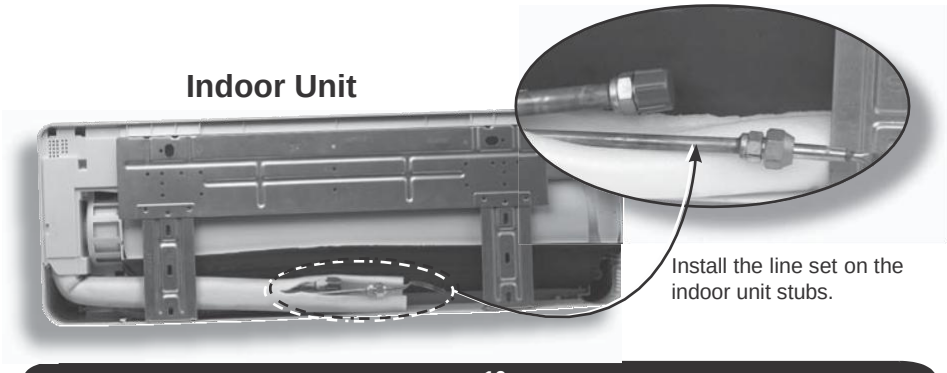
Gently bend the line set stubs from the in- door unit to the desired location. Using 2 x 10”/12” Crescent wrenches remove the flare nuts from the indoor unit line stubs.

The indoor unit is filled with a dry gas, check for release of this to ensure that no leaks are present. Use a small amount of vacuum pump oil on the male flare threads to ease installation.

Connect the line set to the stubs. Using the 2 wrenches, 1 on the male and 1 on the female tighten the flare nuts. Run the line set to the outdoor unit, avoid tight bends and kinking the lines.

If line set length is in excess of that re- quired, cut line set and re-flare or coil ex- cess vertically to facilitate oil return to the compressor.





OUTDOOR UNIT INSTALLATION

Evacuation

Gauges can now be attached to the service ports - ***SERVICE PORTS HAVE A 5/16" CONNECTION TO GAUGES,*** *which is different from the norm for R-22.* You will need specific hoses or an adaptor for the 5/16" connection.

Once the gauges are attached the line set can be leak checked using Nitrogen at 300 psig. Evacuate the unit and interconnect down to a minimum of 400-500 Microns, break vacuum with Nitrogen to further leak check.

Re-evacuate the system down to 300-400 Microns or lower for a period of one hour. This is an R-410A System it is essential that a deep vacuum be pulled on the system to remove all traces of moisture. See *"System Start-Up"* section to fine-tune the refrigerant charge.

Main Power Wiring

Electrical wiring should be done in accordance with all National Electrical Code (NEC) and local state/city building codes.

Note: A small screwdriver is required for unit terminals.

Breaker size and wiring must be sized for the rating plate amperage, MCA and HACR. Use only HACR type breakers, each system installed must have a separate branch circuit with an individual breaker/fuse.

Electrical Specifications

Nominal Capacity Btuh	Volts/Hz/Ph	Compressor		Cond Fan		Indoor Fan		Total FLA	MCA	HACR Max Fuse
		RLA	LRA	Watts	RLA	Watts	RLA			
Cooling Models Only										
9,000	115/60/1	7.5	47	35	0.81	16	0.35	7.2	10.6	15.0
12,000	115/60/1	9.9	53	45	0.80	16	0.35	9.6	14.0	20.0
18,000	208/230/60/1	6.6	42	60	0.85	40	0.40	6.4	9.5	15.0
24,000	208/230/60/1	10.0	46	60	0.90	40	0.40	8.1	13.8	23.8
Heat Pump Models Only										
9,000	115/60/1	7.5	47	35	0.81	16	0.35	7.2	10.6	15.0
12,000	115/60/1	9.9	53	45	0.80	16	0.35	9.6	14.0	20.0
18,000	220/60/1	6.6	42	60	0.85	40	0.40	6.4	9.5	15.0
24,000	208/230/60/1	10.0	46	60	0.90	40	0.40	8.1	13.8	23.8

A local disconnect should be installed adjacent to the outdoor unit in accordance with National and Local Codes. The outdoor unit provides power for the indoor unit, no disconnect is required between the outdoor and indoor units.

Line voltage from the disconnect should be wired to:

N - L (115V Unit), + G
L1 - L2 (208/230V Unit), + G

Remove right side knockout on the terminal access panel for whip/wiring connection. Ground connection must be made to the terminal plate.

Heat Pump (208/230 V) unit terminals:

L1 - L2 : Power from breaker + G
L3 - L4 : Power to indoor unit + G
1 - 2 - 3 : Control signals

These are just examples of typical wiring connections. **Always refer to *Wire Diagram* on unit for actual wiring connections.**

Tip: For easier access to the terminals in the outdoor unit remove the lower access panel to install whip and sealtite connectors for conduit.

OUTDOOR UNIT INSTALLATION

Electrical Wiring Installation

⚠ CAUTION ⚠

Electrical Wiring should be done by a certified electrician in accordance with all National ElectricalCode (NEC) and local state/city building codes.

ALL CONTROLS WIRING BETWEEN INDOOR AND OUTDOOR UNIT IS HIGH VOLTAGE MINIMUM 14 AWG WIRE MUST BE USED.

Remove terminal covers from indoor unit and wire to the terminals, *(small screwdriver required).* Control wiring from the outdoor unit must be a point to point i.e. the terminal that the wire is attached to on the outdoor unit must be the same terminal it is wired to in on the indoor unit.

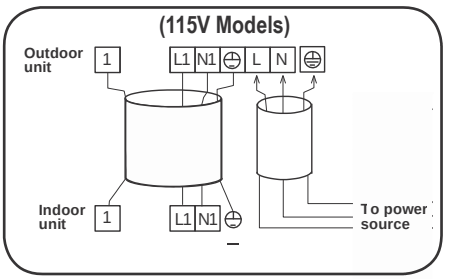
THIS IS EXTREMELY IMPORTANT: Switching the L3 - L4 or N1 - L1 wires will allow the indoor unit to operate but it will not provide controls signals for the outdoor unit so that the compressor will not operate. Ground connection should be made to ground screw marked in indoor unit.

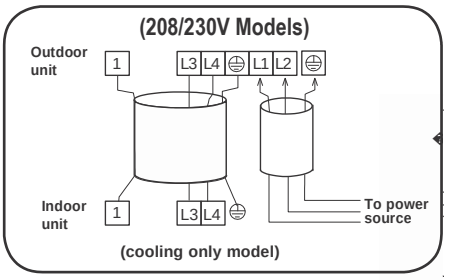
COOLING ONLY WIRING

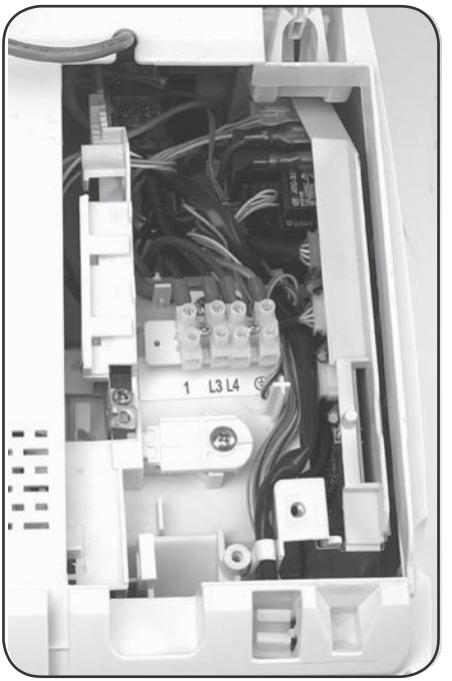
Control wiring at outdoor unit *(cooling only).*

Ground wires connected to the terminal plate indoor and outdoor units must be grounded.

Connection of wires for outdoor unit and indoor unit







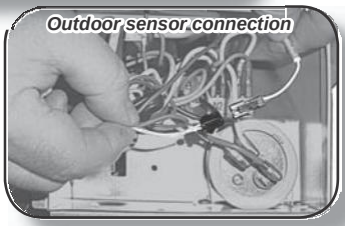
OUTDOOR UNIT INSTALLATION

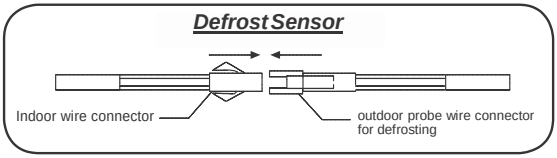
HEAT PUMP WIRING

If the system is a heat pump the defrost sensor must be connected from the indoor unit to the defrost sensor in the outdoor unit. Standard lead length is 25 ft, if a longer length is required then cut the lead and extend using thermostat wire.

The heat pump defrost sensor interconnect wire comes bundled up with the indoor units. It then should be “un-bundled” and connected to the molex connection at the indoor unit and run to the outdoor unit molex connection, typically with the interconnecting wiring and/or interconnecting tubing.

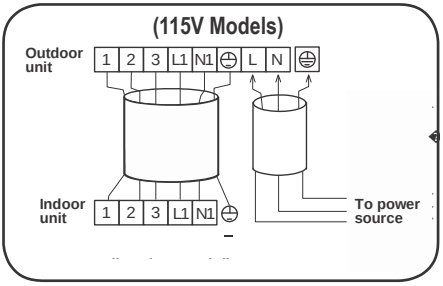
Note: use of colored wire *(supplied with line set)* and defrost sensor connected *(heat pump only).*

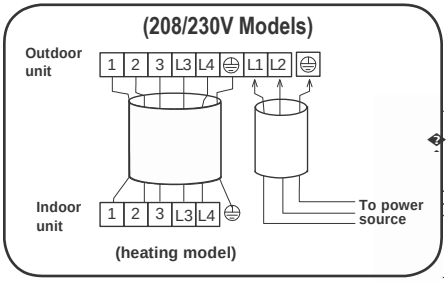




Ground wires connected to the terminal plate on indoor and outdoor units must be grounded.

Connection of wires for outdoor unit and indoor unit





OUTDOOR UNIT INSTALLATION

12) Condensate Hose:

The unit is provided with approximately 18" of condensate hose connected. Hose connection is sized to accept a 3/4" OD or 5/8" ID clear plastic hose to then extend to building drain.

There is approximately 6' of additional drain hose supplied with the *(accessory)* line set.

All condensate hose extensions should be in accordance with local building codes. Remember water only flows downhill to ensure positive draining from the unit. Check using water for a positive flow of condensate.

The basic system installation is now complete. The unit is now ready for start up.

SYSTEM START UP

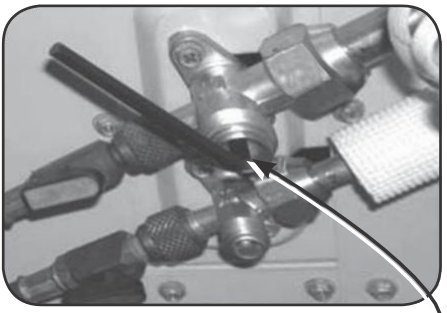
With the evaporator and line set completely evacuated the system can now be opened to allow the refrigerant charge in the outdoor unit to be released into the line set.

The condenser is charged with enough R410A refrigerant for 25 feet of interconnect. For longer line set lengths additional charge must be added in per the following table.

UNITS	LINE SET AND ADDED CHARGE REQUIRED						
	Charge oz. per ft.	30 ft.	35 ft.	40 ft.	45 ft.	50 ft.	CHARGE
9000/12000 Btu	.3oz./ft.	1.5 oz.	3.0 oz.	N/A	N/A	N/A	
18000/24000 Btu	.6oz./ft.	3.0 oz.	6.0 oz.	9.0 oz.	12.0 oz.	15.0 oz.	

The service valves require a 6mm and a 5mm Allen wrench respectively to undo the valve stems. Remove the brass caps from the service valves. ***Open the suction line valve first*** to prevent any possible oil logging of the capillary tube expansion device that can occur if the liquid line valve is opened first with the rest of the system in a deep vacuum. Then open the *"Liquid or Expanded Gas"* line.

Unscrew both valve stems until they come to a stop against the valve body, replace the brass caps, then tighten the caps to prevent leaks. Energize the breaker to allow system to be powered.



Open the suction line valve first

Continued next page.

Note: If interconnect is less then 25 feet a small amount of refrigerant may need to be reclaimed to achieve the proper charge for optimal operation. We recommends fine tuning using the "Superheat" method.

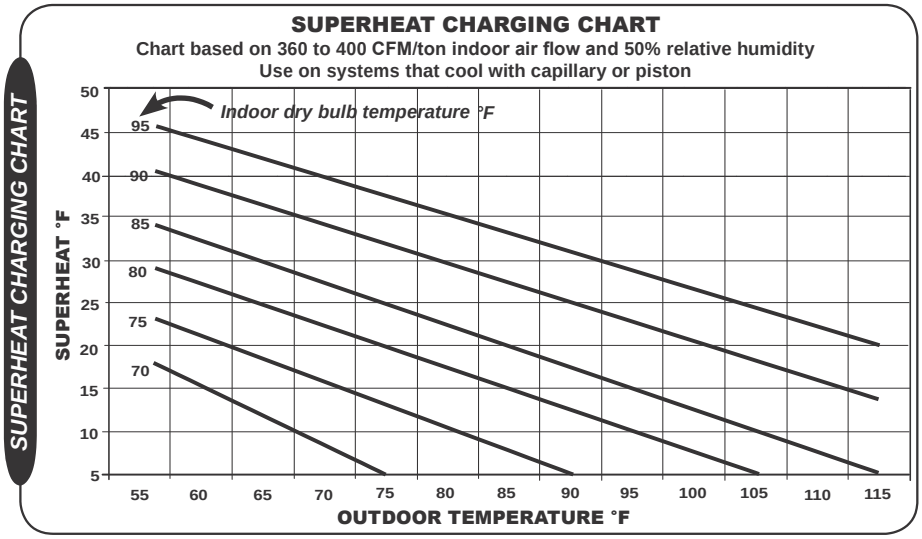
Start the indoor unit, cooling mode is only allowed when the outside ambient temperature is above 60° F to prevent damage to the compressor. Unit has a 3 minute time delay before the compressor start up operation.

FIELD CHARGING

The use of the superheat method is highly recommended for field charging or checking the existing refrigerant charge in a system that is in the cooling cycle. Because each installation is different in terms of indoor air flow, refrigerant line length, etc.., the factory charge may not be correct for every application. To assure the best performance from the air-conditioner, the refrigerant charge should be checked and adjusted, if need be, on each installation.

Note: *Refrigerant superheat is the temperature above the suction pressure at its saturation temperature.*

For proper superheat readings, a standard low-side refrigerant gauge and an accurate thermometer is needed. A mercury or stem-type thermometer is not adequate for suction-line temperatures. We recommend electric thermocouple thermometers (available at most refrigeration wholesalers); however an accurate remote-bulb thermometer can be used. When measuring the line temperature, be sure the thermometer is securely attached to assure accurate measurements. The chart below gives superheat values at various outdoor temperatures. Allow at least 5 minutes running time between charge adjustments for the unit to stabilize.



Note: ***If operating superheat is more than 5° F above the chart value, add refrigerant. If below the chart value remove refrigerant. If below the limit line, remove refrigerant.***

FIELD CHARGING

Instructions:

1. Measure suction pressure and determine evaporator-refrigerant temperature on R410A scale of low-side gauge.
2. Measure suction-line temperature on suction line of the unit.
3. Measure outdoor and indoor temperatures.
4. Determine from the table what the superheat should be for the indoor and outdoor temperatures.
5. Adjust charge if needed. Be sure unit is running at stabilized condition.

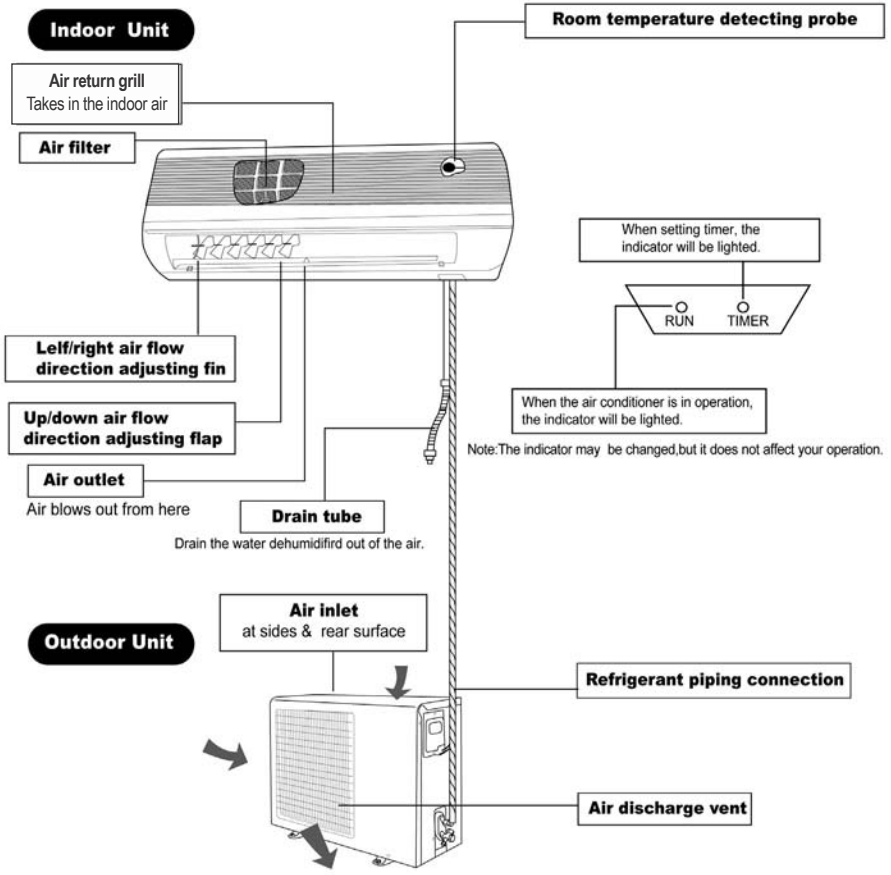
Example of typical system operations:

Cooling Cycle	
Conditions	80°F DB/50% RH Indoors
	82°F DB Outdoors
Return Gas Psig	140 (49° F Saturated Temperature)
Superheat	Refer to supplied superheat chart (16° F)
Heat Cycle	
Conditions	70° F Indoors
	47° F Outdoors
High Side Gas Psig	350/375 (107/112° F Saturated Temperature)
Sub-Cooling	10 - 15° F

Note: When the system is in heat cycle, the refrigerant *charge is checked by using the liquid sub-cool method. Liquid sub-cool is the temperature below the high side pressure at its saturation temperature.*

Guide to features and their function

There are many models, features and appearance will vary. The figure shown is representative of the operation of 9,000/12,000 Btuh systems.


Indoor Unit
Room temperature detecting probe
Air return grill
Takes in the indoor air
Air filter
When setting timer, the indicator will be lighted.
RUN
TIMER
Lelf/right air flow direction adjusting fin
Up/down air flow direction adjusting flap
When the air conditioner is in operation, the indicator will be lighted.
Note:The indicator may be changed,but it does not affect your operation.
Air outlet
Air blows out from here
Drain tube
Drain the water dehumidifird out of the air.
Air inlet
at sides & rear surface
Outdoor Unit
Refrigerant piping connection
Air discharge vent

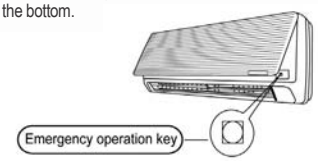
Unit operation section

How to open

Lightly push both sides of the air inlet grille at the botton and pull it to this side till a resistance is felt.

How to close

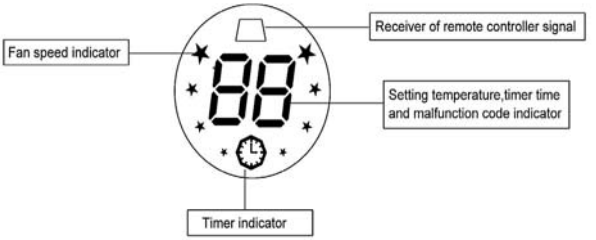
Push down the air inlet grille and the push both sides of air inlet grille at the bottom.

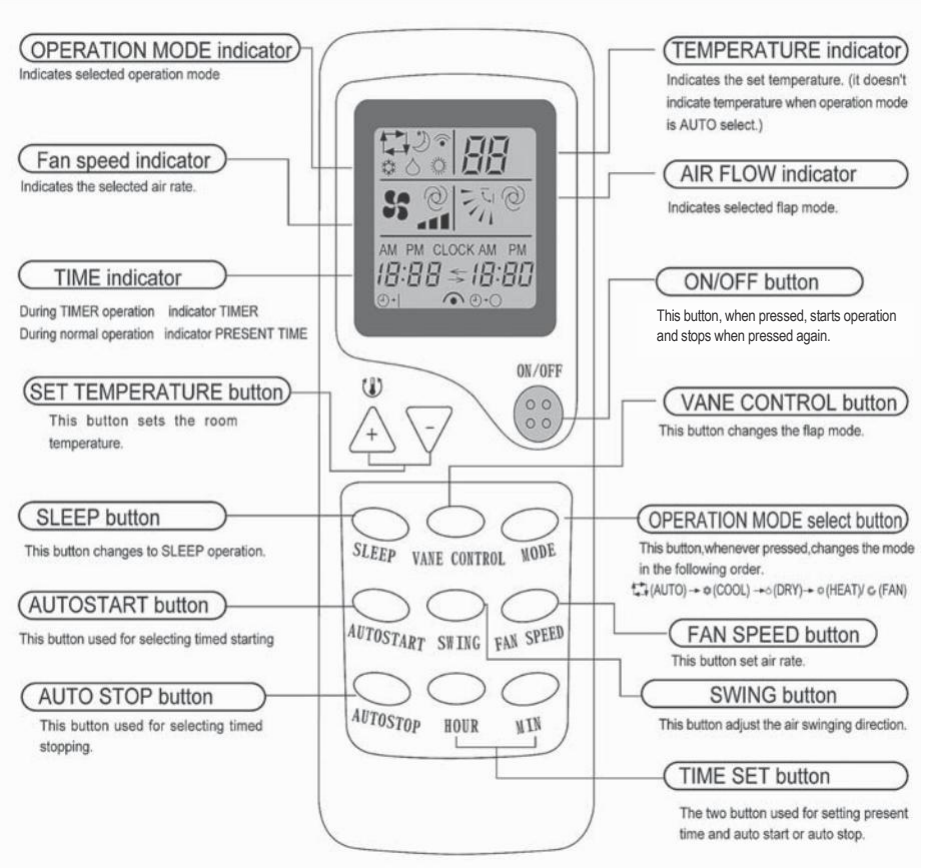


This button can be used as an emergency measure to turn on/off unit when remote controller is not available.

Note: *Do not open the grille at an angle over 60 degrees.*

Remote Control Operation


Fan speed indicator
Receiver of remote controller signal
Setting temperature,timer time and malfunction code indicator
Timer indicator


OPERATION MODE indicator
Indicates selected operation mode
Fan speed indicator
Indicates the selected air rate.
TIME indicator
During TIMER operation indicator TIMER
During normal operation indicator PRESENT TIME
SET TEMPERATURE button
This button sets the room temperature.
SLEEP button
This button changes to SLEEP operation.
AUTOSTART button
This button used for selecting timed starting
AUTO STOP button
This button used for selecting timed stopping.
TEMPERATURE indicator
Indicates the set temperature. (it doesn't indicate temperature when operation mode is AUTO select.)
AIR FLOW indicator
Indicates selected flap mode.
ON/OFF button
This button, when pressed, starts operation and stops when pressed again.
VANE CONTROL button
This button changes the flap mode.
OPERATION MODE select button
This button,whenever pressed,changes the mode in the following order.
(AUTO) → (COOL) → (DRY) → (HEAT)/ (FAN)
FAN SPEED button
This button set air rate.
SWING button
This button adjust the air swinging direction.
TIME SET button
The two button used for setting present time and auto start or auto stop.
AM PM CLOCK AM PM
18:88 18:80
ON/OFF
SLEEP VANE CONTROL MODE
AUTOSTART SWING FAN SPEED
AUTOSTOP HOUR MIN

Remote Control Operation

Note: *Wait 3 minutes before restarting the unit.*

Selecting MODE of OPERATION

To select operating mode, point the remote control toward the indoor air conditioning unit:

1) Press the ON/OFF

button to ***START***.

2) Press the MODE button to step through the operating modes:

AUTO MODE – automatically operates the system in DRY, COOL ,or HEAT mode depending on the indoor temperature and setting.

COOL MODE – operates the system in COOL mode depending on the indoor temperature and set point.

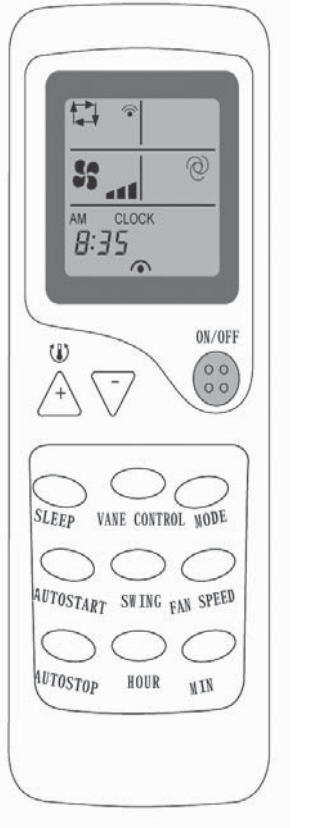
DRY MODE – operates the system in DEHUMIDIFICATION mode.

HEAT MODE – operates the system in HEAT mode depending on the indoor temperature and set point.

Important:
Heating operation will cease at approximately 15° F outdoor temperature due to a sensor located in the outdoor unit. This product ***does not*** contain supplemental electric heat, therefore other means of heat need to used when this system ceases operation at low outdoor ambients.

FAN MODE – runs the FAN to circulate the air.

3) Press the ON/OFF button again to ***STOP.***



Remote Control Operation

Temperature adjustment in AUTO SELECT mode

To adjust the air temperature during AUTO SELECT mode, point the remote control toward the indoor air conditioning unit:

1) Press the + button once. To raise the set point temperature 1°C or 1°F.

2) Press the − button once, to reduce the set point temperature 1°C or 1°F.

COOL/HEAT & FAN/DRY mode

Point the remote control toward the indoor air conditioning unit:

1) Press the ON/OFF button.

2) Press the MODE button, select the mode of operation; COOL, DRY, HEAT/FAN or AUTO.

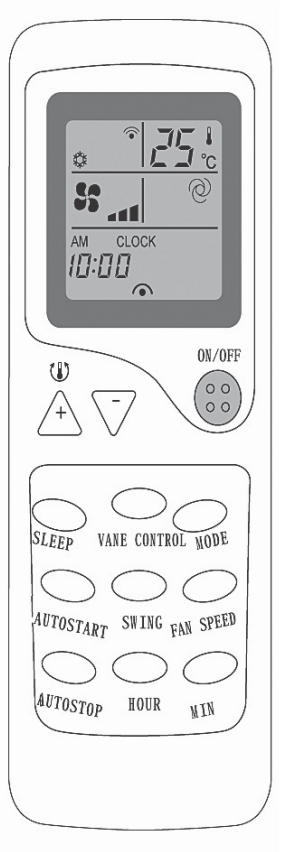
3) Press the + or − to set the desired temperature.

Heat	Cool
64°F- 88°F (16°C-31°C)	64°F- 88°F (16°C-31°C)

Once minimum or maximum setting is reached operation will be continued by pressing + or −

4) Press the FAN SPEED button to set the desired air flow rate.

Press the ON/OFF button again to stop.



Notes:

- In the COOLING-ONLY operation, the HEAT mode will disable, and it will go to FAN mode.
- The settings can be changed even while the air conditioner is off.

Remote Control Operation

Up/down air flow direction adjustment

The up/down air flow direction can be adjusted by pressing the VANE CONTROL button on the remote control, each time this button is pressed, the vane angle changes in the following sequence:

(1) (2) (3) (4) (5) (AUTO)

- (1) through (5) are fixed positions.
- AUTO oscillates up and down automatically.

Air flow velocity adjustment

To change the vane control velocity press the FAN SPEED button.
Each time the button is pressed, fan speed is changed in sequence,

[LO] [MID] [HI] [AUTO]

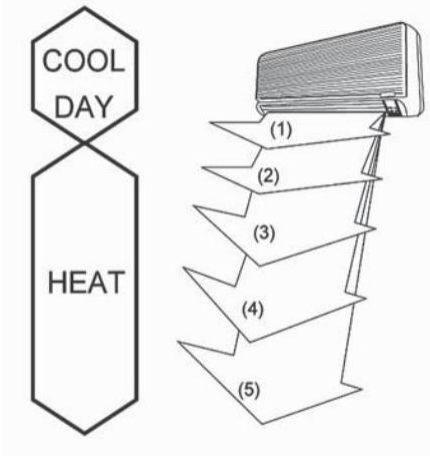
To cool the whole room, use the [HI] setting in COOL MODE. If the sound of the air conditioner operating disturbs your sleep, use the SLEEP mode. (See next page)

Recommended horizontal VANE range

In AUTO mode the VANE positions are adjusted automatically.

In COOL or DRY mode VANE positions (1) or (2) are recommended.

In HEAT mode VANE positions (3) (4) or (5) are recommended.



Left/right air flow direction adjustment

Adjust the air flow direction by hand, move the air flow direction fins left/right to direct the air as desired.

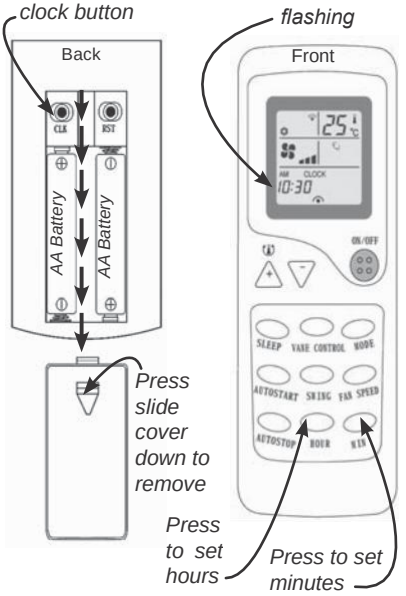
Swing adjustment *(auto oscillation)*

Press the SWING button, to adjust the air swinging direction. Press the button again to exit the SWING mode.

Note:

- *In the cooling operation, when the air conditioner is operated with VANE CONTROL blowing down (4) or (5) for 1 hour, the VANE CONTROL direction is automatically set to level to prevent condensed water from dropping.*
- *Adjust the vertical VANE CONTROL direction using the remote control.*
- *In heating operation, if the output air temperature is too low or when defrosting is done, the horizontal vane position is set to (1).*

Remote Control Operation



Setting the time

When batteries are inserted, the time will automatically be set to 12:00 AM.

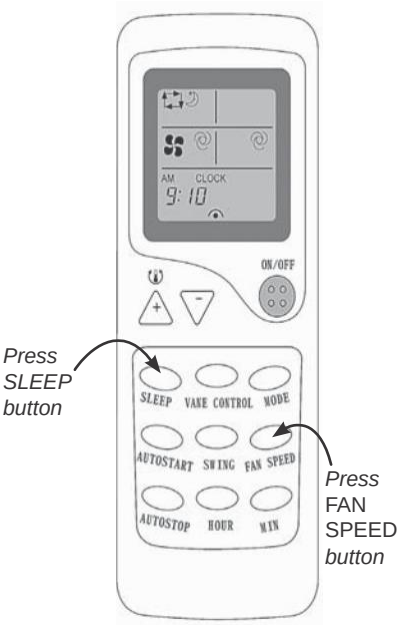
1) With the back cover off, press the CLK button with the tip of a ball pen, etc. The time indicator will flash, the time can now be set.

2) Press the HOUR button to change the hour. ***Example:*** *(Set to 10:AM)* see front view.

3) Press the MIN button to change the minutes. ***Example:*** *(Set to 30)* see front view.

4) When time is set press the CLK button again. Slide the cover back, be sure it's clicked securely into place.

Note: *The timer is set on basis of the time on the clock. Be sure to set the clock correctly.*



Sleep mode

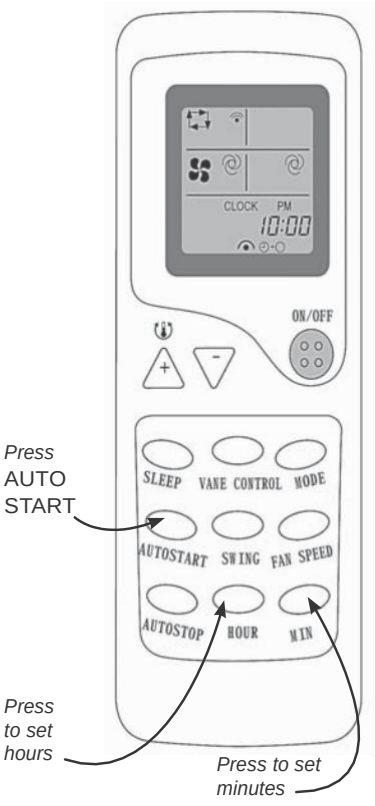
Sleep mode will reduce operation sound when sleeping.

1) Press the SLEEP button to activate this feature (air flow sound from the indoor unit is decreased).

2) Press the SLEEP button again to release the sleep mode or press the FAN SPEED button during the SLEEP mode, and the SLEEP mode is released

Note: *Use the sleep mode when you are going to bed. If this mode is used during the day, the capacity is reduced since the ambient temperature is higher. (COOL mode is recommended for day use)*

Remote Control Operation



How to set the ON timer

1) Press the AUTO START button to set the ON timer mode during operation. Each time the button is pressed, the ON timer mode alternates between ON and OFF.

2) Set the time on the timer using the HOUR and MIN buttons.
   - Each time the HOUR button is pressed, the timer hours are increased by 1 hour.
   - Each time the "MIN" button is pressed, the timer minutes are increased by 10 minutes.

3) To release the ON timer, press the AUTO START button again.

How to set the OFF timer

1) Press the AUTO STOP button to set the OFF timer mode during operation. Each time the button is pressed, the OFF timer mode alternates beteen ON and OFF.

2) Set the time on the timer using the HOUR and MIN buttons.
   - Each time the HOUR button is pressed, the set time is increased by 1 hour.
   - Each time the "MIN" button is pressed, the set time minutes are increased by 10 minutes.

3) To release the OFF timer, press the AUTO STop button again.

Programming timer operation

The ON timer and OFF timer can be used in combination. The set time which is reached first will operate first (⇄ mark indicates the order of timer operations.)

Note: *If the current time has not been set, the timer operation cannot be accomplished.*

Features of Heating Operations

Important:
Heating operation will cease at approximately 15° F outdoor temperature due to a sensor located in the outdoor unit. This product ***does not*** contain supplemental electric heat, therefore other means of heat need to used when this system ceases operation at low outdoor ambients.

Basic principles and performances

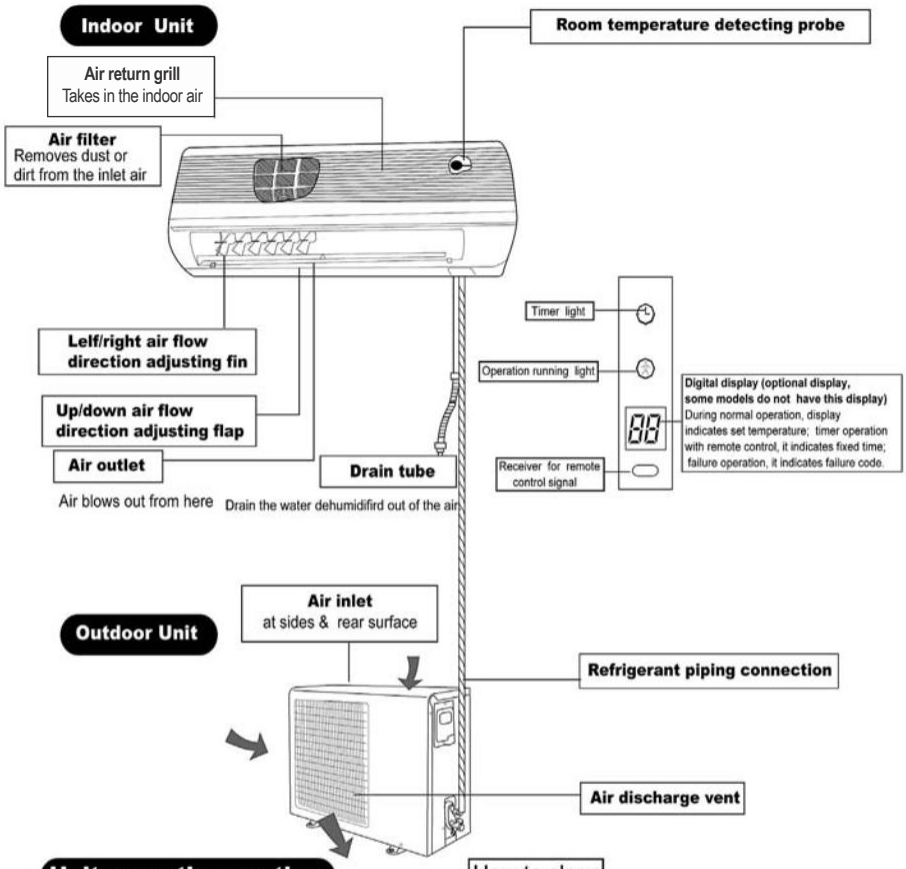
- The Heat Pumps absorb heat from the outdoor air and transfers it indoors to heat the indoor air. The heating capabilities through this principle go up/down with the increase/decrease of the temperature of the outdoor air.
- When the outdoor air temperature is very low, the system can be used together with other heating devices. Good ventilation should be maintained to ensure safety and prevent accidents.

Defrosting

When the outdoor air temperature is very low and humidity is very high, frosting will occur in the heat exchanger of the outdoor unit, which has negative impacts upon the efficiency of the heating performance. In this case, the automatic defrosting function will come into play. The heating operation will be stopped for 5-10 minutes to do the defrosting.

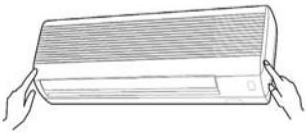
- The fans of both the outdoor and indoor units are stopped. During the defrosting operation, the run light will flash slowly.
- During defrosting, the outdoor unit might generate some steam. It is caused by fast defrosting, which is not a performance failure.
- Upon the completion of the defrosting process, the heating operation is resumed.

Guide to features and their function


Indoor Unit
Room temperature detecting probe
Air return grill
Takes in the indoor air
Air filter
Removes dust or dirt from the inlet air
Timer light
Operation running light
Digital display (optional display, some models do not have this display)
During normal operation, display indicates set temperature; timer operation with remote control, it indicates fixed time; failure operation, it indicates failure code.
Receiver for remote control signal
Lelf/right air flow direction adjusting fin
Up/down air flow direction adjusting flap
Air outlet
Air blows out from here
Drain tube
Drain the water dehumidifird out of the air
Air inlet
at sides & rear surface
Outdoor Unit
Refrigerant piping connection
Air discharge vent

Unit operation section

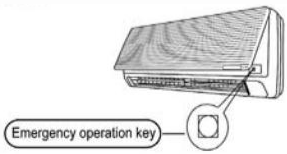
How to open



Lightly push both sides of the air inlet grille at the botton and pull it to this side till a resistance is felt.

How to close

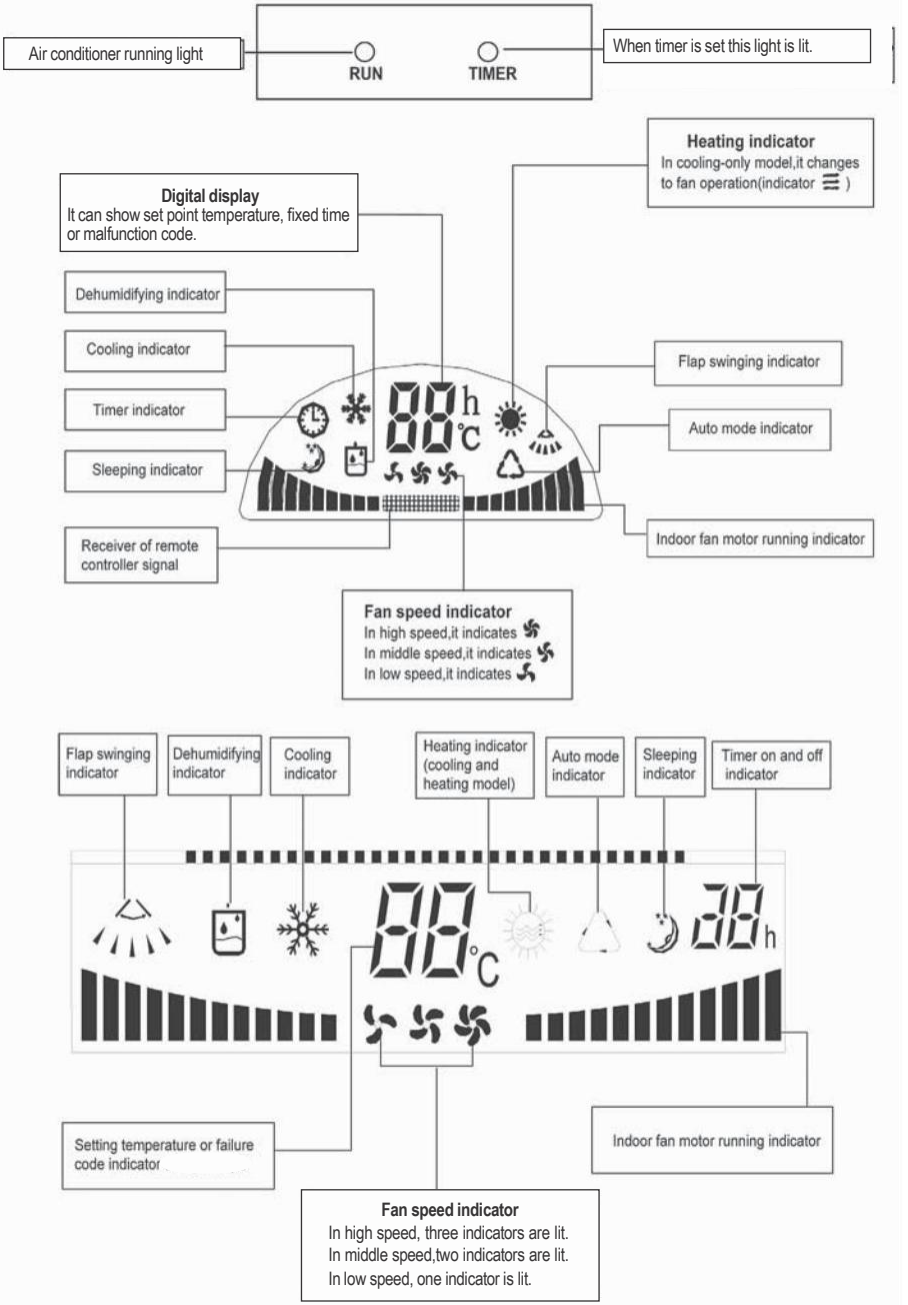
Push down the air inlet grille and the push both sides of air inlet grille at the bottom.



This button can be used as an emergency measure to turn on/off unit when remote controller is not available.

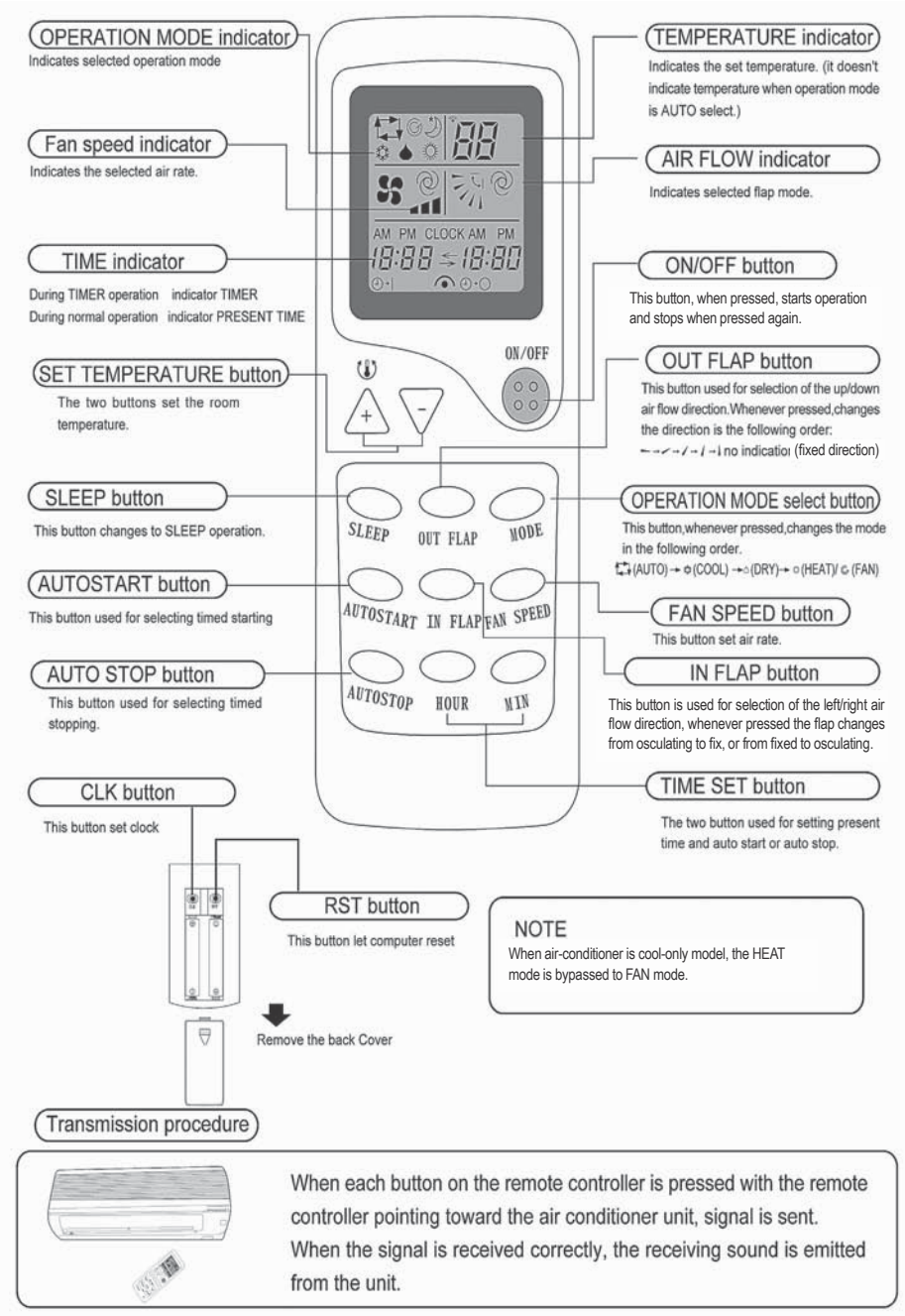
Note: *Do not open the grille at an angle over 60 degrees.*

Remote Control Operation


Air conditioner running light
RUN
TIMER
When timer is set this light is lit.
Heating indicator
In cooling-only model,it changes to fan operation(indicator ☰)
Digital display
It can show set point temperature, fixed time or malfunction code.
Dehumidifying indicator
Cooling indicator
Timer indicator
Sleeping indicator
Receiver of remote controller signal
Flap swinging indicator
Auto mode indicator
Indoor fan motor running indicator
Fan speed indicator
In high speed,it indicates
In middle speed,it indicates
In low speed,it indicates
Flap swinging indicator
Dehumidifying indicator
Cooling indicator
Heating indicator (cooling and heating model)
Auto mode indicator
Sleeping indicator
Timer on and off indicator
Setting temperature or failure code indicator
Indoor fan motor running indicator
Fan speed indicator
In high speed, three indicators are lit.
In middle speed,two indicators are lit.
In low speed, one indicator is lit.

Note: *The indicator may change, this does not affect the operation.*

Remote Control Operation


OPERATION MODE indicator
Indicates selected operation mode
Fan speed indicator
Indicates the selected air rate.
TIME indicator
During TIMER operation indicator TIMER
During normal operation indicator PRESENT TIME
SET TEMPERATURE button
The two buttons set the room temperature.
SLEEP button
This button changes to SLEEP operation.
AUTOSTART button
This button used for selecting timed starting
AUTO STOP button
This button used for selecting timed stopping.
CLK button
This button set clock
RST button
This button let computer reset
Remove the back Cover
Transmission procedure
When each button on the remote controller is pressed with the remote controller pointing toward the air conditioner unit, signal is sent.
When the signal is received correctly, the receiving sound is emitted from the unit.
TEMPERATURE indicator
Indicates the set temperature. (it doesn't indicate temperature when operation mode is AUTO select.)
AIR FLOW indicator
Indicates selected flap mode.
ON/OFF button
This button, when pressed, starts operation and stops when pressed again.
OUT FLAP button
This button used for selection of the up/down air flow direction.Whenever pressed,changes the direction is the following order:
no indication (fixed direction)
OPERATION MODE select button
This button,whenever pressed,changes the mode in the following order.
(AUTO) (COOL) (DRY) (HEAT) (FAN)
FAN SPEED button
This button set air rate.
IN FLAP button
This button is used for selection of the left/right air flow direction, whenever pressed the flap changes from osculating to fix, or from fixed to osculating.
TIME SET button
The two button used for setting present time and auto start or auto stop.
AM PM CLOCK AM PM
ON/OFF
SLEEP
OUT FLAP
MODE
AUTOSTART
IN FLAP
FAN SPEED
AUTOSTOP
HOUR
MIN
NOTE
When air-conditioner is cool-only model, the HEAT mode is bypassed to FAN mode.

Remote Control Operation

Note: *Wait 3 minutes before restarting the unit.*

Selecting MODE of OPERATION

To select operating mode, point the remote control toward the indoor air conditioning unit:

1) Press the ON/OFF

button to ***START***.

2) Press the MODE button to step through the operating modes:

AUTO MODE – automatically operates the system in DRY, COOL ,or HEAT mode depending on the indoor temperature and setting.

COOL MODE – operates the system in COOL mode depending on the indoor temperature and set point.

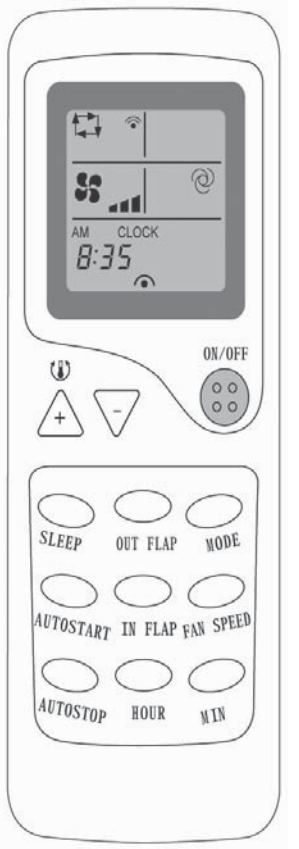
DRY MODE – operates the system in DEHUMIDIFICATION mode.

HEAT MODE – operates the system in HEAT mode depending on the indoor temperature and set point.

Important:
Heating operation will cease at approximately 15° F outdoor temperature due to a sensor located in the outdoor unit. This product ***does not*** contain supplemental electric heat, therefore other means of heat need to used when this system ceases operation at low outdoor ambients.

FAN MODE – runs the FAN to circulate the air.

3) Press the ON/OFF button again to ***STOP.***



Remote Control Operation

Temperature adjustment in AUTO SELECT mode

To adjust the air temperature during AUTO SELECT mode, point the remote control toward the indoor air conditioning unit:

1) Press the + button once, to raise the set point 1°C or 1°F.

2) Press the - button once, to reduce the set point temperature 1°C or 1°F.

COOL/HEAT & FAN/DRY mode

Point the remote control toward the indoor air conditioning unit:

1) Press the ON/OFF button.

2) Press the MODE button, select the mode of operation; COOL, DRY, HEAT/FAN or AUTO.

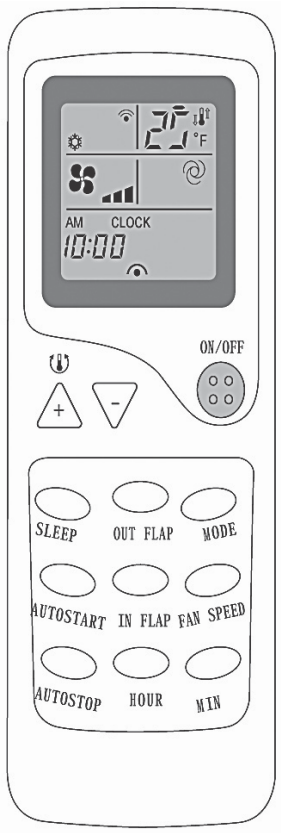
3) Press the + or - to set the desired temperature.

Heat	Cool
64°F- 88°F (16°C-31°C)	64°F- 88°F (16°C-31°C)

Once minimum or maximum setting is reached operation will be continued by pressing + or -

4) Press the FAN SPEED button to set the desired air flow rate.

Press the ON/OFF button again to stop.



Notes:

- In the COOLING-ONLY operation, the HEAT mode will disable, and it will go to FAN mode.
- The settings can be changed even while the air conditioner is off.

Remote Control Operation

Up & down air flow direction adjustment

The up/down air flow direction can be adjusted by pressing the OUT FLAP button on the remote control, each time this button is pressed, the vane angle changes in the following sequence:

(1) (2) (3) (4) (5) (AUTO)

- (1) through (5) are fixed positions.
- AUTO oscillates up and down automatically.

Air flow velocity adjustment

To change the vane control velocity press the FAN SPEED button.
Each time the button is pressed, fan speed is changed in sequence,

[LO] [MID] [HI] [AUTO]

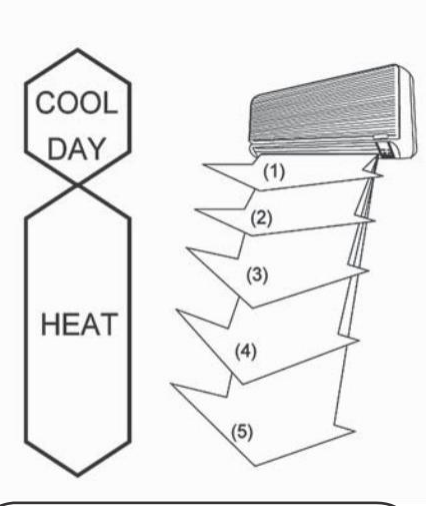
To cool the whole room, use the [HI] setting in COOL MODE. If the sound of the air conditioner operating disturbs your sleep, use the SLEEP mode.

Recommended horizontal VANE range

In AUTO mode the VANE positions are adjusted automatically.

In COOL or DRY mode VANE positions (1) or (2) are recommended.

In HEAT mode VANE positions (3) (4) or (5) are recommended.



Horizontal & vertical auto swing adjustment

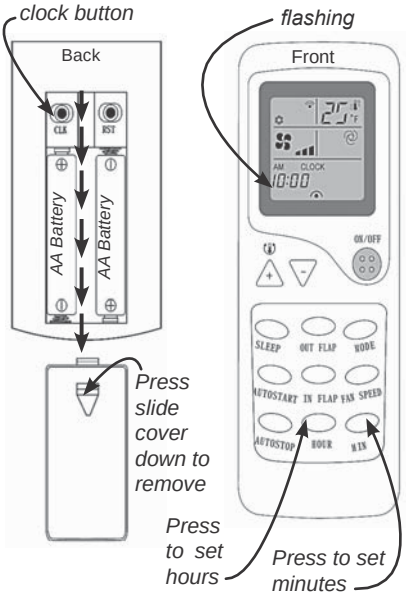
Adjust the left to right air flow direction with the remote control:

- Press the IN FLAP button, the air swing fins will continually oscillate left to right.
- Step through the diferent fins positions using the IN FLAP button (fins can also be set in a fixed position).

Note:

- *In the cooling operation, when the air conditioner is operated with OUT FLAP blowing down (4) or (5) for 1 hour, the OUT FLAP direction is automatically set to level to prevent condensed water from dropping.*
- *Adjust the vertical OUT FLAP direction using the remote control.*
- *In heating operation, if the output air temperature is too low or when defrosting is done, the horizontal vane position is set to (1).*

Remote Control Operation



Setting the time

When batteries are inserted, the time will automatically be set to 12:00 AM.

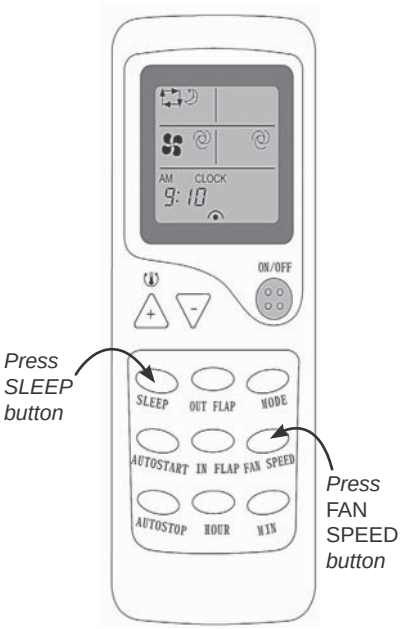
1) With the back cover off, press the CLK button with the tip of a ball pen, etc. The time indicator will flash, the time can now be set.

2) Press the HOUR button to change the hour. ***Example:*** *(Set to 10:AM)* see front view.

3) Press the MIN button to change the minutes.

4) When time is set press the CLK button again. Slide the cover back, be sure it's clicked securely into place.

Note: *The timer is set on basis of the time on the clock. Be sure to set the clock correctly.*



Sleep mode

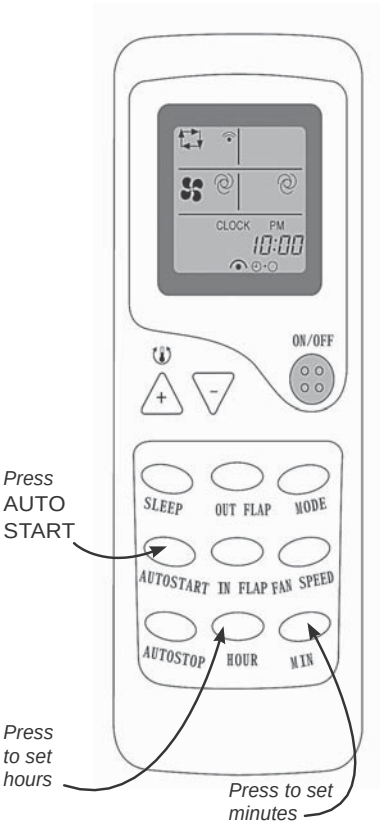
Sleep mode will reduce operation sounds when sleeping.

1) Press the SLEEP button to activate this feature (air flow sound from the indoor unit is decreased).

2) Press the SLEEP button again to release the sleep mode or press the FAN SPEED button during the SLEEP mode, and the SLEEP mode is released

Note: *Use the sleep mode when you are going to bed. If this mode is used during the day, the capacity is reduced since the ambient temperature is higher. (COOL mode is recommended for day use)*

Remote Control Operation



How to set the ON timer

1) Press the AUTO START button to set the ON timer mode during operation. Each time the button is pressed, the ON timer mode alternates between ON and OFF.

2) Set the time on the timer using the HOUR and MIN buttons.
   - Each time the HOUR button is pressed, the timer hours are increased by 1 hour.
   - Each time the "MIN" button is pressed, the timer minutes are increased by 10 minutes.

3) To release the ON timer, press the AUTO START button again.

How to set the OFF timer

1) Press the AUTO STOP button to set the OFF timer mode during operation. Each time the button is pressed, the OFF timer mode alternates beteen ON and OFF.

2) Set the time on the timer using the HOUR and MIN buttons.
   - Each time the HOUR button is pressed, the set time is increased by 1 hour.
   - Each time the "MIN" button is pressed, the set time minutes are increased by 10 minutes.

3) To release the OFF timer, press the AUTO STop button again.

Programming timer operation

The ON timer and OFF timer can be used in combination. The set time which is reached first will operate first (⇄ mark indicates the order of timer operations.)

Note: *If the current time has not been set, the timer operation cannot be accomplished.*

Features of Heating Operations

Important: Heating operation will cease at approximately 15° F outdoor temperature due to a sensor located in the outdoor unit. This product ***does not*** contain supplemental electric heat, therefore other means of heat need to used when this system ceases operation at low outdoor ambients.

Basic principles and performances

- The Heat Pumps absorb heat from the outdoor air and transfers it indoors to heat the indoor air. The heating capabilities through this principle go up/down with the increase/decrease of the temperature of the outdoor air.
- When the outdoor air temperature is very low, the system can be used together with other heating devices. Good ventilation should be maintained to ensure safety and prevent accidents.

Defrosting

When the outdoor air temperature is very low and humidity is very high, frosting will occur in the heat exchanger of the outdoor unit, which has negative impacts upon the efficiency of the heating performance. In this case, the automatic defrosting function will come into play. The heating operation will be stopped for 5-10 minutes to do the defrosting.

- The fans of both the outdoor and indoor units are stopped. During the defrosting operation, the run light will flash slowly.
- During defrosting, the outdoor unit might generate some steam. It is caused by fast defrosting, which is not a performance failure.
- Upon the completion of the defrosting process, the heating operation is resumed.

Maintenance

The air conditioner must be turned off before the maintenance is to be carried out.

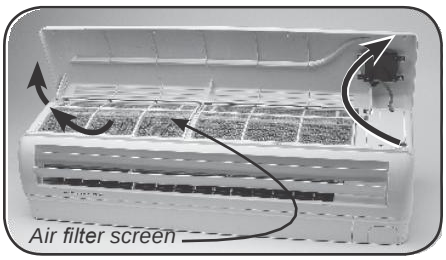
Before the operating season

1) Check if there are any materials blocking the intake and outlet vents of the indoor and outdoor units.
2) Check if the installation stand is corroded or rusty.
3) Check if the unit is properly grounded.
4) Check if the air filter is clean.
5) Connect to the power source.
6) Put batteries in the remote controller.

During the operating season

Check the air filter periodically during the season and clean it if it is dirty.

Note: *Do not open the grille to an angle over 60 degrees.*



1) To remove the air filter screen from the unit.
   - Gently press the two lower ends of the grille and open it.
   - Carefully lift the air filter screen up and out pulling it toward you.
2) To Clean the air filter screen vacuum it with a brush attachment (do not lift the front cover more than 60°). If the screen is very dirty, use lukewarm water *(about 86°F or 30°C)* to wash it. Air dry after washing.
   - Do not use boiling water to clean the screen.
   - Do not use exess heat or an open fire to dry the screen.
   - Do not exert too much force pulling or stretching the screen.
3) Replace the air filter screen.

   Do not operate the air conditioner without the air filter screen. To do so will cause dirt to collect on the interior of the unit which may lead to poor performance and damage the unit.

Maintenance

To clean the surface of the air conditioner:

- Use a soft and dry cloth to wipe the air conditioner off, or use a vacuum cleaner to clean it.
- If the air conditioner is very dirty, use a damp soft cloth with a neutral household detergent to clean the surface of the unit.

Note: If the air filter screen is blocked by dust or dirt, the performance of cooling and heating will be affected, and the operation noise and power consumption will increased. Therefore, the air filter screen should be cleaned regularly.

After the operating season

1) Set the temperature at 86°F or 30°C and operate in the fan status for about half a day, to dry out the interior of the units.
2) Stop the operation of the system and turn OFF the power switch. The air conditioner will consume about 5W of electric power after the unit is turned off. For energy saving and safety, it is advisable to disconnect the power in the off season.
3) Clean and reinstall the air filter screen.
4) Clean the surface of both the indoor and outdoor units.
5) Take the batteries out of the remote control.

Troubleshooting

Check the following before requesting after-sale service from your dealer.

If the air conditioner does not operate at all

- Check if the main power is on.
- Is the time set to "ON" position? (If using the timer function.)
- Check for a blown fuse or a power failure.
- Check the batteries in the remote control.

Poor cooling or heating performance

- Room temperature can't be controlled *(Too cold or too hot).* Check if the room temperature setting too low or too high.
- Are the air filters clean (Not clogged)?
- Are the window (s) and door (s) opened?

Poor cooling performance

- Check if direct sunlight is entering the room.
- Check if there is a heat source in the room (i.e. - hot plate, oven, stove, etc).
- Are there too many people in the room?

If the air conditioner does not operate properly ever after conducting the above checks, if there is still doubt even after consulting the ***Basic Operation Characteristics*** section on following page of this manual, or in case of such phenomena as described below, turn off the power and contact your distributor.

Cases requiring immediate contact with the installer

Disconnect the power immediately, inform your installer in the following situations:

- Fuse or breaker often trips off (repeatedly).
- Remote does not initiate operation.
- Abnormal noise is heard during operation.
- If faulty operation is observed when the RUN button is pressed and even after restarting the operation after 3 minutes, faulty operation does not disappear.

Basic Operation Characteristics

Problem	Cause
The unit can not be restarted just after shut down. *(RUN light is on)*	**Restart is delayed for 3 minutes after shut down to protect the unit.** *Three-minute protection timer incorporated in the microcomputer actuates automatically. Except when power is connected, this function does not actuate.*
Air does not blow out at starting of heating operation.	*Air circulation is stopped to prevent blowing cold air into the room until heat exchanger warms up. (2 to 5 min)*
Heat pump system ceases operation in heating mode.	*Check to see if outdoor temperature is below 15° F. If so, operation will not resume until the outdoor temperature rises above 17° F.*
Air is not blown out for 6 to 12 min, at heating operation.	**When outdoor temperature is low and humidity is high, the unit sometimes performs defrosting automatically.** *Please wait. During defrosting, water or steam may be seen coming from the outdoor unit.*
Air is not blown out at DRY operation.	*Indoor fan is sometimes stopped to prevent vapor of dehumidified moisture and save energy .*
Mist is blown out at COOL operation.	**This phenomenon sometimes occurs when the temperature and humidity of the room are very high.** *It will disappear with the lowering of the temperature and humidity.*
Noise or cracking sound.	*This is caused by the refrigerant that is circulating inside the unit.*
Noise is heard (cracking sound). After a power outage or after disconnecting the power supply plug.	*This is caused by heat expansion or contraction of plastics.*
Operation can not be restarted even if the power is restored.	*The memory circuit of the microcomputer is cleared. Operate the remote controller again to restart the operation.*
Remote control signals are not received.	**Remote control signals may not be received when signal receiver on the air conditioner body is exposed to direct sunlight or strong lighting.** *Interrupt the sunlight or dim the lighting.*
Moisture may form on the air outlet grilles.	**If the unit is operated for a long period of time with the high humidity**, *moisture may form on the air outlet grilles and drip down .*